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10/623,674	07/21/2003	Steven D. Burch	GP-303298	5067

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EXAMINER

AUSTIN, MELISSA J

ART UNIT

PAPER NUMBER

1745

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

Application Number: 10/623,674  
Filing Date: July 21, 2003  
Appellant(s): BURCH ET AL.

**MAILED**

SEP 07 2005

**GROUP 1700**

\_\_\_\_\_  
Steven D. Burch, John C. Fagley  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 27 June 2005 appealing from the Office  
action mailed 9 February 2005.

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**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

This appeal involves claims 1-12, 15-18, 20-22, and 24-30.

Claim 7 has been amended subsequent to the final rejection in the After Final Amendment filed 6 April 2005.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows: The following references are used as evidence against the listed claims instead of the claims being rejected "in view of" the reference: Mugerwa et al. (claims 1-3, 6-9, 28); Baukal, Jr. (claims 10, 26).

**(7) Claims Appendix**

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The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

Mugerwa, M.N. et al., eds. Fuel Cell Systems. 1993. Plenum Press. New York.  
pp. 202,228,229.

Baukal, Jr., C. E. Heat Transfer in Industrial Combustion. CRC Press. Boca  
Raton. 2000. Sections 2.2.3, 8.414.

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-12, 15-18, 20-22, 24-30 are rejected under 35 U.S.C. 103(a). This  
rejection is fully set forth in prior Office action, Paper No. 22005.

**(10) Response to Argument**

Regarding items VII.B.1 and VII.C of the Appeal Brief: Applicant argues that  
neither Grasso nor Bloomfield teach an HT-PEMFC but rather teach conventional fuel  
cells. The present specification defines high temperature as "between about 100°C and  
150°C," and states that conventional fuel cells "operate at about 60°C to about 90°C."  
Given no definition of the term "about" it is considered that "about 100°C" and "about  
90°C" at least overlap. Additionally, Applicant argues that one of ordinary skill in the art  
would not have been motivated to recycle air from the condensers into the compressors  
because the Mugerwa only teaches generally the advantage of interaction between the  
fuel cell and subsystems. Applicant asserts that this is an "obvious to try" rationale.  
However, the integration of systems within a plant is a very common skill in plant design  
and/or optimization, and the recycle of air is a common strategy used in order to reduce

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utility costs by using the temperature and/or pressure of the air instead of releasing it as an effluent and then having to heat or pressurize another stream "from scratch."

Regarding item VII.D of the Appeal Brief: Applicant argues that the "examiner utilizes a 'capable of' test, which the examiner created by interpreting the claim language 'adapted to' to mean 'capable of'." According to MPEP 2173.05(g), "adapted to" is a functional limitation. There is no reason to believe that the prior art WGS reactor could not be adapted to heat the steam before being used in the primary reactor with heat energy from the reformat, and Applicant has provided no evidence to the contrary. Again, Applicant asserts that one of ordinary skill in the art would have to "experiment blindly with numerous plant parameters to achieve the claimed invention;" however, heat integration is very common in the art of plant design and optimization as a strategy to reduce utility costs as well as to make the waste streams more environmentally friendly and increase efficiency.

Regarding item VII.E of the Appeal Brief: Applicant argues that the rejection of claims 7 and 8 utilizes hindsight. Grasso teaches "adequate water" is supplied to the fuel cell. "Adequate" is interpreted as meaning both in quantity and quality.

Regarding item VII.F of the Appeal Brief: Applicant argues that no bypass circuit is taught because such a circuit inherently requires a diversion device. However, this is not a limitation of the claim and bypass circuits do not necessarily require diversion devices; they may operate under the pressure of the stream.

Regarding item VII.G and VII.H of the Appeal Brief: Applicant argues that Eggert does not teach an HT-PEMFC, which, as defined by Applicant, operates at "around

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100°C to around 150°C." However, Eggert's fuel cell operates at 80°C, which is "about 100°C." Additionally, Eggert teaches superheating of the reactant stream. The reactants fed to the reformer must be mixed for the reforming reaction to take place.

Regarding item VII.I of the Appeal Brief: Van Dine teaches water injected into a reactant stream that has passed through a heat exchanger. This can be repeated to reach the desired steam to carbon ratio, thus injecting water before the reactants enter a heat exchanger. Any water not vaporized by the heat of the reactant stream upon injection would be vaporized in the subsequent heat exchanger. Eggert teaches a superheat heat exchanger.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Melissa Austin

  
**PATRICK JOSEPH RYAN**  
**SUPERVISOR**

Conferees:

Patrick Ryan



Steven Griffin

